UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,288	02/20/2001	Fu-Hsieng Lee	EM/LEE/6543	4217

7590 10/01/2004

BACON & THOMAS
4th Floor
625 Slaters Lane
Alexandria, VA 22314-1176

EXAMINER	
HOGAN, MARY C	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/785,288	LEE ET AL.
	Examiner	Art Unit
	Mary C Hogan	2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/20/01*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This application has been examined.

2. **Claims 1-19** have been examined and rejected.

Specification

3. The disclosure is objected to because of the following informalities. Appropriate correction is required.

4. It is noted that the specification contains numerous grammatical errors. A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. The substitute specification filed must be accompanied by a statement that it contains no new matter.

5. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Drawings

6. The drawings are objected to because of the following. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

7. **Figure 1** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. **Page 2** of the specification describes **Figure 1** as illustrating the invention of US Patent Number 5,752,834, therefore, it is Prior Art. See MPEP § 608.02(g).

8. **Figure 2:** "transaction" is misspelled for the Simulation System and I/o should be "I/O".

Claim Objections

9. **Claims 1-19** are objected to because they contain numerous grammatical errors. For example, **Claim 1** includes the following phrases: "outputting open type command", "simultaneously performing operation", "by platform dynamic algorithm", "then outputting control signal", "building integrated open type command" and Claims 4 and 18 recite "mainly serially respectively".

10. Applicant's cooperation is requested in correcting any grammatical errors of which applicant may become aware in the claims.

11. **Claim 1** recites "performing operation and analysis", however, there is no indication in the claim language and the specification what operations and/or analysis is performed.

12. **Claim 2** recites "math model", however, there is no indication in the claim language or the specification what this math model is, how it operates, and what mathematical functions it provides.

13. **Claim 3** recites that "the feedback signal...after being concerted into status signal...is simultaneously input into a math model...to execute operation...". From this language is unclear what is "simultaneously" done in this step.

Claim Rejections - 35 USC § 112

14. **The following is a quotation of the second paragraph of 35 U.S.C. 112:**

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. **Claims 10-12,14 and 16** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

16. Regarding **Claims 10-12,14 and 16**, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Interpretation

17. **Claims 1 and 3** recite the term "simultaneously". As to **Claim 1**, "simultaneously performing operation and analysis" was understood as if mathematical operations are performed on signals that are input to the system. "Operation" and "analysis" were taken to mean the same thing (mathematical operations) since there was no definite meaning in the claim language. **Claim 3** recites that "the feedback signal...after being converted into status signal...is simultaneously input into a math model...to execute operation...". From this language is unclear what is "simultaneously" done in this step or what the "operation" is. It was interpreted that there is no "simultaneous" input of signals, and that the only signal that in input to the math model is the feedback signal. Further, it was determined that the "operation" refers to mathematical calculations performed on the signal for the purposes of controlling the simulation and feedback to the user.

18. **Claim 2** recites "math model", however, there is no indication in the claim language or the specification what this math model is, how it operates, and what mathematical functions it provides. Therefore, it was determined that this math model indicates mathematical operations that are performed on the signals that are input to the motion system.

19. **Claims 11 and 16** teach a kernel such as BIOS. It is noted that the definition of BIOS is: "acronym for basic input/output system, the built-in software that determines what a computer can do without accessing programs from a disk, on PCs, the BOIS contains all the code required to control the keyboard, display screen, disk drives, serial communications and a number of miscellaneous functions, BIOS is typically placed in a ROM chip, it also makes it possible for the computer to boot itself". From this definition, it is determined that a PC must contain BIOS to boot up and operate properly with peripheral devices.

20. **Claims 10-12,14 and 16** recite the phrase "such as" rendering the claims indefinite. In this instance, the examples given in the claims were treated as a list, the contents of which connected with the term "or". Therefore, the instance of one of these examples in the applied prior art was determined sufficient to meet the claim limitation.

Claim Rejections - 35 USC § 102

21. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

22. **Claim 1-8, 10-19** are rejected under 35 U.S.C. 102(e) as being anticipated by Rosenberg et al (U.S. Patent Number 6,366,272, herein referred to as Rosenberg.

23. As to **Claim 1**, **Rosenberg** teaches: a control method of an open type motion simulation system, the method comprising the steps of: a simulation system **(Figure 2, element 14)** linked to a motion system **(Figure 2, element 12)**; the simulation system outputting open type command to the motion system **(column 14, lines 48-63, column 13, lines 44-52** wherein "open type commands" refer to the different commands that can be input by different types of input devices coupled to the interface); the motion system simultaneously performing operation and analysis on the open type command and platform feedback data by platform dynamic algorithm principle of a controller **(column 16, lines 20-23, lines 40-48)**; and the motion system then outputting control signal to a control driver to drive the platform **(column 15, line 65-column 16, line 3, column 18, lines 48-51)**; thus building integrated open type command between the simulation system and the motion system.

24. As to **Claim 2**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 1, wherein the platform dynamic algorithm principle is a math model **(column 16, lines 46-48 and lines 57-61)**.

25. As to **Claim 3**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 1, wherein the open type motion command of the simulation system is converted into motion signal through a motion cue transfer **(column 11, lines 53-56, column 15, line 65-column 16, line 3)**, and the feedback signal of the motion platform after being converted into status signal through a

status transfer **(column 18, lines 48-51)**, is simultaneously input into a math model of the platform dynamic algorithm principle to execute operation, then outputs control signal **(column 16, lines 40-48)**.

26. As to **Claims 4 and 5**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 1, wherein the simulation system and motion system on the logic architecture respectively include a presentation layer **(column 6, lines 23-25, 58-60, column 7, lines 1-7)**, a transaction layer **(column 8, lines 9-10, "I/O" and "display device", column 9, lines 17-24, column 12, lines 57-60, column 13, lines 4-10)**, a control layer **(column 7, lines 45-48)**, a linking layer **(Figure 2, elements 24 and 25)**, a physical layer **(column 7, lines 42-45)**, a simulation system block **(Figure 2, element 14)**.

27. As to **Claim 6**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 5, wherein the simulation system block outputs open type motion command to the physical layer and linking layer block of the motion system **(column 14, lines 51-52 and 57-61)**; the physical layer and linking layer block then convert the motion command which is output into the control layer block **(column 7, lines 23-28)** wherein the motion command is sent to the host computer over a serial bus and the BIOS of the host system enables the communication between the simulation and motion system, allowing the host computer to convert this command if necessary to understand and process it (see paragraph 14); the converted motion command is executed through the platform dynamic algorithm principle **(column 15, line 65-column 16, line 3)**, the control layer block outputs the control signal into the physical layer and linking layer block **(column 15, line 67-column 16, line 1)** wherein the force commands are sent to the actuators of the simulation system; the physical layer and linking layer block then outputs the control signal into the transaction layer block **(column 12, lines 57-61)** in which the actuators are responding to signals sent from the host computer; the transaction layer block then uses the control signal to directly control and drive the motion platform of the presentation layer block **(column 12, lines 57-61)**; the presentation layer block uses a transducer to return the platform message to the control layer block through the physical layer and linking layer block **(column 13, lines 4-10, 35-42)**; the control layer block then uses feedback data and motion command of the platform message, to be executed by the platform dynamic algorithm principle and then outputs control signal **(column 7, lines 14-31)**, thus, when the motion system successively receives the open type motion command from the simulation system, the motion system successively executes the physical layer and linking layer block, the control layer block, the transaction layer block, and the presentation layer block.

28. As to **Claim 7**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 4, wherein the presentation layer of the simulation system includes at least one user

command and application program **(column 7, lines 14-19)** wherein "user commands" manipulate the application program.

29. As to **Claim 8**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 7, wherein the command is input of user or operation interface, and the application program is game or simulation program **(column 6, lines 23-24, lines 58-60)**.

30. As to **Claim 10**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 4, wherein the control layer of the simulation system is an operation system, such as Windows 98, Windows NT or UNIX **(column 7, lines 45-48)** wherein the control layer of the simulation system is implemented by the host computer system.

31. As to **Claims 11 and 16**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 4, wherein the linking layer of the simulation system and motion system is a kernel, such as BIOS **(Figure 2, element 24, column 9, lines 7-24)** wherein the simulation system and motion system are linked together by a serial communications link, therefore, requiring BIOS to be operating on the host computer for proper operation. The host computer can be a PC or other type of computer **(column 7, lines 42-45)** that requires BIOS for proper operation as discussed above **(paragraph 14)**, therefore BIOS must be present in Rosenberg's teaching.

32. As to **Claim 12**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 4, wherein the physical layer of the simulation system is a computer hardware, such as Encore RIT, SGI machine or PC **(column 7, lines 42-45)** wherein the physical layer of the simulation system is implemented by the host system.

33. As to **Claim 13**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 4, wherein the presentation layer of the motion system is a motion platform of 3 to 6 d.o.f **(column 7, lines 1-7 and 14-19)** where the devices used vary and can allow various degrees of freedom, encompassing the range of 3 to 6.

34. As to **Claim 14**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 4, wherein the transaction layer of the motion system is a control driver, such as servo control driver **(column 12, lines 57-60, column 13, lines 4-10)**.

35. As to **Claim 15**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 4, wherein the control layer of the motion system is a platform dynamic algorithm principle **(column 15, line 65-column 16, line 3)** wherein the force algorithm chosen is dependent on the application that the host system is running, thereby being a platform dynamic.

36. As to **Claim 17, Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 4, wherein the physical layer of the motion system is a computer hardware, such as Encore RIT, SGT machine or PC and image producer **(column 7, lines 42-45)**.

37. As to **Claims 18 and 19, Rosenberg** teaches: the control method of an open type motion simulation system wherein the motion signal and status signal are input into the block of analysis of operation space **(column 38, line 65-column 39, line 1)** wherein the previous position, P_{old} was obtained from the host computer and the new position, P, is obtained by the simulation system; the block of analysis of operation space, after mutual operation and analysis between the present status and the next step of operation motion, obtains motion command satisfying the motion platform control **(column 39, lines 5-9)** wherein when it is determined that a collision should have occurred when it did not; the block of inspection and correction of singular point proceeds inspection and correction of the motion command **(column 39, line 9)** wherein the simulation is updated accordingly; the block of detection of failure of system, after certifying the system is correct, outputs the motion command into the block of control signal transfer **(column 39, lines 9-12)** wherein the simulation is updated with the corrected position; the block of control signal transfer converts the motion command into control signal satisfying the motion platform **(column 13, lines 37-43)**.

Claim Rejections - 35 USC § 103

38. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

39. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

40. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Rosenberg** as applied to Claim 4 above, and further in view of Burgel et al (U.S. Patent Number 6,710,764), herein referred to as **Burgel**.

41. As to **Claim 9**, **Rosenberg** teaches: the control method of an open type motion simulation system as claimed in claim 4, wherein the transaction layer of the simulation system includes an internet communication interface RS232/NetWork **(column 9, lines 17-20)**, and an I/O control interface **(column 8, lines 9-10, column 10, lines 10-11)**.

42. **Rosenberg** does not expressly teach the transaction layer including Direct X.

43. **Burgel** teaches that the DirectInput application in DirectX is a de facto standard used to control force feedback devices and that DirectX is targeted to developers to allow them to directly, and with least overhead possible, talk to the existing hardware without having to explicitly consider hardware-specific parameters. It can be viewed as a minimal abstraction of hardware that is realized by the device drivers of the individual hardware units **(column 2, lines 25-40)**.

44. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the transaction layer as taught in **Rosenberg** to further include DirectX since **Rosenberg** and **Burgel** both teach methods of providing force feedback to the user through various input devices and DirectX, as taught in **Burgel**, allows game developers to directly talk to existing hardware of the host system without having to explicitly consider hardware-specific parameters of the host system **(column 2, lines 25-40).**

Conclusion

45. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

46. www.pcwebopedia.com/TERM/B/BIOS,html recites the definition of BIOS.

47. Jacobus et al (U.S. Patent Number 6,104,158) teaches a method for providing a tactile virtual reality to the user.

48. Massie et al (U.S. Patent Number 5,898,599) teaches an apparatus that physically exchanges forces with a user, providing three and six degrees of freedom.

49. Rosenberg (U.S. Patent Number 6,232,891) teaches a force feedback interface having isotonic and isometric control capability coupled to a host computer that displays a graphical environment such as a GUI.

50. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C Hogan whose telephone number is 703-305-7838 or 571-272-3712 starting mid-October 2004. The examiner can normally be reached on 7:30AM-5PM Monday-Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on 703-305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mary C Hogan
Examiner
Art Unit 2123

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER